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10/677,735	10/03/2003	Mark A. McHugh	02940313PA	4931

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EXAMINER	
HU, HENRY S	
ART UNIT	**PAPER NUMBER**
1713	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	**Application No.** 10/677,735	**Applicant(s)** MCHUGH ET AL.	
	Examiner Henry S. Hu	**Art Unit** 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Oath & Declaration of 2-13-2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. It is noted that USPTO has received an Oath & Declaration filed on February 13, 2004. The examiner accepts the **drawing with only one figure** filed with this application on October 13, 2003. **Claims 1-29 are now pending**. An action follows.

Specification

2. The disclosure is objected to because of the following informalities:

(a) On **page 1** at line 8, recitation of "homogenous" should be changed to "**homogeneous**".

(b) On **page 8** at lines 2 and 5 as well as throughout the specification, all recitations of "psia" are wrong and should be changed to "**psi**". Please refer to line 3 for unit of pressure.

(c) On **page 12** at lines 2 of Table 1 as well as throughout the specification, all recitations of "psig" are wrong and should be changed to "**psi**". Please refer to line 3 for unit of pressure.

Appropriate corrections for (a) - (c) are required.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. **Claims 1-5 and 7-8 are** provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over **Claims 1-5 and 7-8** of copending Application No. **10/677,746**, now **USPG-PUB 2005/0075460 A1 to McHugh et al**. (with priority date 10-3-2003 and the same assignee).

This is a provisional obviousness-type double patenting rejection since the conflicting claims have not yet been patented. Although the conflicting claims are not identical, they are not patentably distinct from each other. The subject matter claimed in the instant application is obviously disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

Parent **Claim 1** and its dependent **Claims 2-5 and 7-8** of present application relate to a process for producing homogenous blends of chemical agents and **polymers** in the presence of a supercritical carbon dioxide while both components have functional groups, which can be reacted or associated with each other.

In a close examination, **Claims 1-5 and 7-8** in copending Application No. **10/677,746,** now **USPG-PUB 2005/0075460 A1 to McHugh et al.**, relate to the process for producing homogenous blends of chemical agents and **elastomeric fluoroolymers** in the presence of a supercritical carbon dioxide while both components have functional groups, which can be reacted or associated with each other.

In a close examination, the process of Claims 1-5 and 7-8 are found to be **exactly the same as** that of **Claims 1-5 and 7-8** of present application except the use of "polymers". It is noted that polymer is a genus while elastomeric fluoroolymer is a species. **An elastomeric fluoroolymer is a polymer, while a polymer is not necessar~~y~~ily to be an elastomeric fluoroolymer.** In view of the statement on specification on **page 5 at lines 9-10**, the polymers of interest in present application may include **most fluoroelastomers, hydrocarbon elastomers, and other amorphous polymers**. Therefore, both applicants are not patentably distinct and an ODP rejection is applied.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 26 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

On **Claim 26** at line 2 and **Claim 27** at line 2, the term "**approximately**" or "**significant**" is a relative term, which renders the claim **indefinite**. Both "**approximately**" and "**significant**" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The Examiner suggests changing to a clear language. The Applicants also need to check such a wording having a defined statement in specification. Otherwise, it is unknown about the ceiling.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. *The limitation of parent* ***Claim 1*** *in present invention relates to a process for producing homogenous blends of chemical agents and polymers, comprising:*

(A) ***combining, in the presence of a supercritical carbon dioxide, at least one polymer*** *capable of expansion in the presence of said supercritical carbon dioxide, which includes* ***at least one functional group*** *distributed at one or more locations along its chemical backbone,* ***with at least one chemical agent which includes at least one functional group****, which is capable of associating with said at least one functional group distributed at said one or more locations along the chemical backbone of said polymer, said combining step permits said at least one chemical agent to impregnate within said at least one polymer;*

(B) ***permitting*** *said at least one functional group on said chemical agent to associate with said one functional group distributed at said one or more locations along the chemical backbone of said polymer, said permitting step* ***producing a blend*** *wherein said at least one polymer is associated with said at least one chemical agent at at least one of said one or more locations along the chemical backbone of said polymer; and*

(C) ***separating*** *said supercritical* ***carbon dioxide****.*

See other limitations of dependent ***Claims 2-29****.*

8. Claims 1-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Daly et al. (US 5,766,522).

Regarding the limitations of parent **Claim 1, Daly** et al. disclose a continuous process to prepare powder coating compositions by first feeding in a continuous extruder, then contacting a mixture of **(A) at least one polymer resin and (B) at least one additional powder coating ingredient including curing agent**, in a process medium fluid specifically in the form of **supercritical fluids** or liquefied gases to effectively reduce the viscosity of the powder coating precursors (the components (A) and (B)) so that to allow a processing at a lower temperature (column 3, line 52-63; column 4, line 16-22; abstract, line 1-7; see **curing agent** at column 16, line 23-38 and column 2, line 47; see **supercritical carbon dioxide** as a medium at column 6, line 1-10 and column 11, line 10-22; **co-solvent(s) may be added if necessary**, see column 11, line 23 column 12, line 8).

Daly et al. further disclose that both thermoplastic and thermoset base resins can be used in component (A). With respect to the required functional group(s) on both components (A) and (B), various types of **epoxy resin, hydroxyl- or carboxyl-functional polyester can be cured with aminoplast curing agent or diisocyanate compound** (column 15, line 1 – column 17, line 39). Daly et al. furthermore disclose that spray drying can be used to separate the medium fluid from the product (column 10, line 52 – column 11, line 2).

9. Regarding **Claims 2-3 and 8**, the amount of **aminoplast curing agent** for curing is preferably sufficient to substantially completely react with all of the **hydroxyl** functionalities (column 16, line 23-38).

With respect to **Claim 5**, both aminoplast curing agent and diisocyanate compound can be used together for curing with functional polymer. It is noted that **at least one additional powder coating ingredient** can be used in component (B).

Regarding **Claims 4 and 6-7**, it is noted that **at least one polymer resin** including **epoxy resin, hydroxyl- and carboxyl-functional polyester** can be used in component (A).

Regarding **Claim 9**, both thermoplastic and thermoset base resins can be used in component (A) (column 15, line 1 – column 17, line 39). Poly(ethylene-co-vinyl acetate) is one of those polymers.

Regarding **Claim 10**, the curing agents can be generally provided in an amount sufficient to react with **at least one-half** the hydroxyl groups of resin (column 16, line 23-25).

Regarding **Claims 11-15 and 28**, the statement disclosed on column 4 at lines 52-67 alleges that "the **molten extruded** powder coating precursor is processed through the **melt pump** to form a powder coating precursor stream of **increased pressure**" and then "the supercritical media is applied" would cover the limitations of Claims 11-15 and 28.

Regarding **Claims 16-17 and 29**, Daly discloses that spray drying and the like can be used to separate the medium fluid from the product (column 4, line 12-14; column 10, line 52 –

column 11, line 2). The reactor scale would certainly decide the speed of pressure reduction to remove carbon dioxide (column 10, line 60-62).

Regarding **Claim 18**, both thermoplastic and thermoset base resins can be used in component (A) (column 15, line 1 – column 17, line 39). Polymer with biodegrability is one of those polymers.

Regarding **Claims 20-21**, supercritical carbon dioxide is used as above.

Regarding **Claims 18-19 and 22-23**, various types of additive including dyes and the like as known in the art may be included (column 18, line 41 – column 19, line 32).

Regarding **Claim 24-27**, the statement disclosed on column 11 at lines 23 – column 13, line 42 by using various types of **co-solvent(s)** would cover the limitations of Claims 24-27.

10. Claims 1-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Mandel et al. (US 5,548,004).

Regarding the limitations of parent **Claim 1, Mandel** et al. disclose a method of producing coating material by mixing **at least a polymer resin**, **at least a curing agent** and other additives in **supercritical carbon dioxide media** (column 1, line 44-58; abstract, line 1-15; column 2, line 12-43; particularly see column 2 at line 12-19). (See **hydroxyl-, carboxyl- and**

epoxy-functionalized polymer resins at column 6, line 20-45; see **triglycidylisocyanurate (TGIC) is used as curing agent** at column 7, line 9-21 and also see **other types of curing agent** column 6, line 28-32). The stepwise process disclosed on column 8 at lines 8-38 would cover the limitation of the claimed process. Mandel et al. further disclose that depressurizing can be used to separate the medium fluid from the product (column 7, line 59-67). Attention is on column 2 at lines 12-19 regarding the statement as "curing agents and polymer resins may be used together" in this regard.

11. Regarding **Claims 2-3, 8 and 10**, many types of curing agent are used (column 7, line 9-21; column 6, line 28-32). For example, the amount of **TGIC curing agent** for curing with **Araldite polyester resin** is 4.5 to 56.1 % by weight (column 7, line 9-21). Other ratio may be used throughout the disclosure

With respect to **Claim 5**, attention is on column 2 at lines 12-19 regarding the statement as "curing agents (**or more than one curing agents**) can be used for curing with functional polymer(s).

Regarding **Claims 4 and 6-7**, attention is on column 2 at lines 12-19 that **at least one polymer resin** including **epoxy resin, hydroxyl- and carboxyl-functional polyester** can be used together in this regard (column 6, line 20-28).

Regarding **Claim 9**, both thermoplastic and thermoset base resins can be used in resin component (column 6, line 20-28). Poly(ethylene-co-vinyl acetate) is one of those polymers.

Regarding **Claims 11-15 and 28**, the statement disclosed on column 8 at lines 8-38 and column 5 at lines 1-20 would cover the limitations of Claims 11-15 and 28.

Regarding **Claims 16-17 and 29**, Mandel discloses that **depressurizing** can be used to separate the medium fluid from the product (column 7, line 59-67), other method including spray drying and the like as known in the art can also be used to separate the medium fluid from the product. The reactor scale would certainly decide the speed of pressure reduction to remove carbon dioxide.

Regarding **Claim 18**, both thermoplastic and thermoset base resins can be used in resin component (A) (column 6, line 20-28). Polymer with biodegrability is one of those polymers.

Regarding **Claims 20-21**, supercritical carbon dioxide is used as above.

Regarding **Claims 18-19 and 22-23**, various types of additive including pigments or dyes and the like as known in the art may be included (column 6, line 33-45).

Regarding **Claim 24-27**, the statement disclosed on column 5, lines 27 – column 6, line 19 by using various types of **co-solvent(s)** would cover the limitations of Claims 24-27.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to a process for producing homogenous blends of chemical agents and functionalized polymers in the presence of supercritical carbon dioxide:

US Patent No. **6,407,165 B1 to Wang** et al. only disclose the preparation of elastomeric compositions for damping by adding **an unsaturated damping additive** to a vulcanizable composition of matter such as **a functionalized polymer resin** (abstract, line 1-5; column 9, line 11-42). However, **supercritical medium is not disclosed or suggested**. Therefore, Wang fails to teach or fairly suggest limitations of present application.

13. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Henry S. Hu whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306 for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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May 12, 2005

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